歴史都市防災論文集　Vol.11 掲載論文・報告一覧

【論文】

1. 台地型寺内町の防災防衛的特性

DEFENSIVE AND DISASTER PREVENTIVE CHARACTERISTICS SHOWN IN THE TEMPLE COMPOUND TOWNS ON THE PLATEAU CONSTRUCTED IN THE AGE OF CIVIL WAR

青柳憲昌・臼井秀一郎・坪田叡伴・大場修

Jodo-shin sect's Jinaimachi, the temple compound towns, constructed mainly during the age of civil war (16th century) were self-government-like religious cities with defensive and disaster preventive characteristics. Especially early formed Jinaimachi towns were located at the tip of the plateau adjacent to rivers, constructing a moat on the other side, which reflects the high priest *Rennyo*'s idea of the town. These towns were basically composed of orthogonal city-blocks, regardless of the land with ups and downs, surrounding the main temple of the town treated as a disaster prevention center. Those towns' relatively low house density produced a blank area behind houses on each lots, installed waterways on parting lines from the facing lots, that seems to be effectively functioned as a fire prevention vacant land.

2. 江戸から東京へ その防火体制と有効性に関する研究

Study on structure and effectiveness of fire prevention, transition from Edo to Tokyo

森下雄治

This study aims to clarify transition of fire prevention structure from Edo to Tokyo and its effectiveness. Whilst the fire prevention structure in Edo was based on three policies including designation of firebreak areas (open space), introduction of fireproof buildings, organization of fire services, the fire prevention structure in Tokyo has modernised fire defence organization by abolishing firebreak areas and giving emphasis to introduction of fireproof buildings to supplement them. As a result, large fires became preventable by the late Meiji Period.

3. 法隆寺金堂壁画保存事業における「防災」の理念と手法

IDEAS AND METHOD OF DISASTER PREVENTION SHOWN IN THE PRESERVATION ACTS FOR THE BUDDHIST WALL PAINTINGS IN THE MAIN HALL OF HORYUJI (1916-56)

青柳憲昌

Preservation Committee for the Wall Paintings in the Main Hall of Horyuji was established in 1916, and their problems recognition of progressing deterioration of the wall paintings were summarized as the following 3 points; 1) aged deterioration of ancient structure which caused cracks on the surface of the paintings, 2) aged deterioration of the wall paintings themselves which foliated the color, 3) insufficiency of the fire prevention equipments. The preservation acts had executed measures based in those 3 points until 1956. Nonetheless the former committee in the 1910's concluded it was nonessential to execute the fundamental restoration, concerned experts' idea of disaster prevention required it in the 1930's, while trying to maintain its cultural value, namely keeping paintings in the hall after the act completion, by means of advanced technologies and academic researches. Encountered many difficulties, after all, the paintings are now preserved in the back storage of the temple, which symbolically shows *aporia*; "disaster prevention" in the modern sense is, needless to say, a necessary measure to save cultural heritages but unavoidably decreases cultural value of them.

4. 全国調査からみた文化財保有社寺における犯罪被害

Heritage Crimes at Temples and Shrines Having Nationally Registered Cultural Properties: An Analysis of a Nation-wide Social Survey in Japan

中谷友樹・米島万有子・崔明姫

The aim of this article is to examine the recent situations of heritage crimes at temples and shrines having nationally registered cultural properties of buildings and historical art works through a nation-wide social survey in Japan. We revealed substantial numbers of criminal damages on cultural properites, and observed the trendencies of repeated victimisation and positive correlationships between different criminal damages suggesting concentrations of different crimes at the same sites. In addition, we statistically identified situational risks of heritage crimes which were differently associated with temples and shrines' characteristics and surrounding environments among different crime types.

5. 自然災害による文化財の被害および修復費用に関する調査研究

A Survey on Damage and Restoration Cost of Cultural Heritages after Natural Disaster

崔明姫・米島万有子・中谷友樹・豊田祐輔・鐘ヶ江秀彦

Preservation and inheritance of cultural heritage have become difficult problems because of aging and depopulation which caused non-successor and difficulties in financing management of cultural property restoration. In this paper, the questionnaire survey to shrines and temples thuoughout of Japan is conducted, that aims to understand the damage and recovery status of cultural properties which suffered by natural disaster, and consider how shrines and temples resolve their restoration fee in the disaster damage cases. In addition, based on the result of survey, we analyze the self-resolve abilities of restoration fee and clarify the characteristic of financial resource of shrines and temples.

6. Man's contribution to our cultural heritage degradation: A case study of Moinuddin Chishti Dargah

Ar. Sakriti Vishwakarma

The Chishti Dargah in Ajmer, India has been in existence for the past 800 years now, an abode to the famous saint Moinuddin Chishti who established Chishtiya Silsilah of Sufism in India. The complex is a major pilgrim and cultural center throughout the world; it witnesses an enormous tourist influx throughout the year. The site has undergone an immense transformation, today what remains is an amalgamation of historic and modern architecture rapidly modifying, leading to alarming conditions of the historic structures. This paper aims to highlight the dargah as an example to study our contribution in transforming a cultural heritage site according to our needs without any respect to the heritage, it also raises questions against the "appropriate" practice for conservation in high "culture-sensitive" sites.

7. 平成 28 年（2016 年）熊本地震で被災した八王神社の解析的研究

ANALYTICAL STUDY FOR SHRINES DAMAGED BY KUMAMOTO EARTHQUAKE IN 2016

瀧野敦夫・佐藤澪・向坊恭介・鈴木祥之

In April 2016, many wooden structures were damaged in Kumamoto earthquake. In this study, the damaged shrines, which were built in the traditional construction method of timber structures, were investigated and seismic response analysis was conducted in order to clarify the cause of earthquake damage. The column base of the main halls was slipped and the base was fallen down from the foundation stone. In the analytical results, the maximum story drift angle exceeded 1/10 rad because the column base was constrained in any horizontal direction by the pin support. The horizontal support reaction was much higher than maximum static frictional force, calculated by weight of structure and coefficient of friction (μ=0.3).

8. 悉皆調査に基づく 2016 年熊本地震における伝統構法木造建築物の被害と柱脚移動の分析

Study on Damage and Column-base Movement of Traditional Timber Buildings Based on Inventory Surveys on the 2016 Kumamoto Earthquake

向坊恭介・佐藤英佑・鈴木祥之

In this paper, we analyze damage and column-base movement of traditional timber buildings on the 2016 Kumamoto Earthquake, based on inventory surveys. We chose two districts as inventory survey area. Most of the traditional timber buildings in the areas could be classified as either house or barn, and the damage of barn buildings were heavier than that of houses. Column-base movement were observed at many buildings, and it is found that the heavy damage of surrounding soil and foundation tended to increase the column-base movement.

9. 2016 年熊本地震における被災した伝統構法木造建物の 3 次元地震応答解析

3D Earthquake Response Analysis for Un-anchored Traditional Wooden Houses during 2016 Kumamoto Earthquake

村田晶・八木耀平・鈴木祥之・宮島昌克

In Japan, some traditional style wooden houses are not fixed with base stones (ishibadate base) on the ground. When an earthquake occurred, they were sliding on stones. In order to clarify influence of an earthquake, many static load tests and shaking table tests have been executed. Thus, Kumamoto earthquake occurred last year and many traditional style houses were damaged. It is thought that we can evaluate the characteristic of these houses by analyzing such damage. In this study, we have purposes to estimate two wooden houses of traditional style at Kumamoto city and Mashiki town which suffered the damage of 2016 Kumamoto Earthquake.

10. 平成 28 年熊本地震による通潤橋の地震応答と耐震補強に関する研究近

Earthquake response to the 2016 Kumamoto earthquake and retrofitting of Tsujun bridge

萩原一帆・伊津野和行

Tsujun Bridge at Yamato town in Kumamoto is a cultural heritage masonry arch aqueduct bridge, which was built in 1854 to send water for agriculture. This bridge suffered damage due to the 2016 Kumamoto earthquake, and cannot send water because of leakage. This paper conducted earthquake response analysis of Tsujun bridge using FEM, and studied the strengthening method for future earthquakes. The results showed that the strengthening at the base of the water channel was effective to decrease the shear stress distribution.

11. 伝統的橋梁に設置された木除杭の性能に関する実験

An Experimental Study of the Performance of Stakes that has installed in the Traditional Bridges

竹田周平・石橋孝則

Stakes that has installed in the traditional bridges like Uji-bridge and Togetsu-bridge, have long been used to prevent bridges from driftwood. However, stakes design codes are not established. And little is known about the function of these stakes. In this paper, we focus on the function and performance of stake. At first, we investigated the actual stakeks of four traditional bridges. And we demonstrate a fundamental experiment. It was found that driftwood passes between piers after rotation about the stake.

12. 伝統構法木造仕口の復元力特性と摩擦の効果

Restoring Force Characteristics of Traditional Wooden Joints and Friction Effects

棚橋秀光・吉富信太・須田達・大岡優・岩本いづみ・鈴木祥之

The authors have researched the mechanisms and formulations of traditional wooden joints with wedges by applying the Elasto-plastic Pasternak model. However, restoring force characteristics of embedment of traditional wooden joints under cyclic loadings have not been clarified so far, although cyclic loadings have significant effects on their behaviors.Thus, the rotational embedment tests of traditional wooden joints with/without wedges and Teflon sheets under cyclic loadings were carried out and their restoring force characteristics were

obtained. Especially, the effects of wedges and friction on their restoring force characteristics are discussed. The frictional resistances are obtained by examining the differences of the restoring force with and without Teflon sheets. As a result, the frictional resistances have large effects on the stiffness and strength of the restoring force characteristics of joints.

13. 伝統構法木造軸組における土塗り小壁の復元力評価法

Evaluation Method for Restoring Force Characteristics of Strip-shaped Horizontal Mud-Walls in Traditional Wooden Frames

山田耕司・中治弘行・長瀬正・鈴木祥之

In this paper, the resisting force calculation method of hanging walls made of mud plaster in a wooden frame is proposed. This calculation method is composed of 2 fracture mechanisms: the compression failure and the shear failure of a hanging wall derived from full-height mud plaster wall test. This calculation method is checked by the comparison with the full scale tests of wooden frame with various height hanging walls. Results are as follows: 1) The proposed method gives rhe approximate horizontal resisting force of wooden frame with a hanging wall. 2) Six hundred mm height of a hanging wall is the border line between the compression failure and the shear failure of a hanging wall.

14. 実大実験に基づく土塗り小壁付木造軸組の復元力特性

Restoring Force Characteristics of Timber Frame with Strip-Shaped Horizontal Mud-Wall based on Full-scale Tests

中治弘行・長瀬正・山田耕司・鈴木祥之

In order to clarify the restoring force characteristics of timber frames with strip-shaped horizontal mud-walls such as hanging wall and window back wall, cyclic shear loading tests of timber frames were carried out. The theoretical estimations agree well with the test results. It is found that the effect of the size of strip-shaped horizontal mud-wall is attributable to the failure mechanism of mud-wall, and the theoretical estimations give satisfactorily the restoring force characteristics timber frames with hanging wall or window back wall alone, and combined with them.

15. 白川流域の洪水による歴史的建造物への影響評価 ―熊本地震および阿蘇山噴火を考慮した流出解析―

Damage prediction of historic buildings by flood in the Shirakawa River

梶山敦司・里明信・里深好文

The Kumamoto Prefecture experienced two significant earthquakes in 2016 that affected even the houses and historical buildings. Furthermore, many facilities along the Shirakawa River were also damaged owing to the earthquake, raising concerns that collapse and flooding will cause even more damages. Therefore, a predictive calculation was carried out to estimate the degree of damage that can occur if flooding occurred resulting from torrential rains that the region had experienced over the past few years. From the results, the amount of flooding in the area with many historical sites was estimated to be around 1 to 2 m at most.

16. 豪雨による洪水と土石流の発生リスクを踏まえた防災計画

Development of An Emergency Evacuation System for Comprechensive Disaster Prevention Countermeasures

中島秀明・田中耕司・金淵中・中北英一・養老伸介

Multi-environment zones (i.e. areas with various geographical risk factors) have very high potential for disaster. In addition, recent natural disasters have occurred due to complex sets of factors according to the debris flow and urban inundation in multiple-environment zones of urban areas with high and low mountainous areas. In order to mitigate these disasters more effectively by a countermeasure, it is necessary to investigate what causes damage from natural disasters. However, it is very difficult to predict disasters in the foreseeable future as well as to analyze the cause of disasters. Therefore, emergency evacuation system should be established by feedback from past disasters. The objectives of this study are to estimate the

risk evaluation index according to 2-D debris flow with 2-D urban inundation models, to determine the PMP (probable maximum precipitation) and run-off discharge due to the DAD (Depth-Area-Duration) analysis to estimate the external force condition. Finally, multi-hazard risk maps, evacuation plans and evacuation route maps combining both disasters according to the emergency evacuation scenario (EES) are proposed by a Geographic Information System (GIS).

17. 害獣自動認識のためのアライグマ画像データベースの構築と深層学習による認識の試行

Construction of a Raccoon Image Database and a Trial of Deep Learning for Vermin Recognition

初田慎弥・大野真史・泉知論・孟林

This report gives construction of an image database of racoons and a trial to apply the deep learning technique to vermin recognition. Photographs and movies of racoons and some other similar animals are taken in a zoological facility and then clipped and labeled with the aid of GUI tool developed by ourselves to construct an image database including 11,600 racoons, 2,700 racoon dogs, and 21,500 backgrounds. A trial of deep learning with the database is conducted utilizing an open-source software framework “Caffe”. Our experiment shows that the system achieves about 90% of recognition rate.

18. 3 項道路指定における防災性能の担保に関する研究

A study on securing safety in the provision of the Building Standard Law Article 42 paragraph (3)

小池貴大・岡井有佳・加藤仁美・池宮秀平

Narrow roads in much wooden densely buildings area have problems of hygiene and disaster prevention. It’s required to improve the disaster prevention performance within the district by widening the road with rebuildings. However, now the rebuildings have not progressed and moreover, road widening has the risk for detracting the historical value and atmosphere in narrow roads. Therefore, securing the disaster prevention performance while maintaining attractive narrow roads is necessary. This study focuses on of the Building Standards Law Article 42 Paragraph (3), and clarifies the actual practice of securing disaster prevention performance for buildings along with the 42-3 roads.

19. GIS を用いた木造密集市街地における袋路の避難経路の抽出方法に関する研究

A Study on Extraction Method of Evacuation Routes of Blind Alleys in Densely Wooden Build-up Area Using GIS

雪谷亮太・宗本晋作・山田悟史・北本英里子

The purpose of this paper is to provide an extraction method of evacuation routes for blind arrays in historic districts without reconstruction. This paper applies this method to the case of the north district of Kyoto city, where the wooden houses are standing close to each other and the most blind arrays remain. We proposed how to use Geographic Information System for finding blind arrays and the gap of these houses that can be used as evacuation routes. We serve to demonstrate this method by evaluating the possibility of passage of the found routes by the field survey.

20. 京都市先斗町における来遊者を対象とした避難シミュレーション ―火災・地震発生時の混雑による渋滞に着目して―

An Evacuation Simulation for Visitors in Ponto-cho District: Reducing the Congestion of the Emergency Evacuation Situation on the Fire and the Earthquake

林田南実・金度源・大窪健之・林倫子

The Ponto-cho district is located in Kyoto city. The width of roads and alleys in this historical district is very narrow, but on the other hand Ponto-cho district is one of the tourist attractions in Kyoto. Therefore, it is urgent task to make an evacuation plan not only for residents but also for visitors. This study analyzed the problems on the evacuation behavior through the Agent Oriented Simulation and suggested solutions to shorten the time from

starting to evacuate to completing to evacuate by using some narrow alleys called Roji or stairs to Misosogigawa river that has already existed in this district.

21. 積雪期を考慮した観光客の津波避難シミュレーション ～北海道函館市重要伝統的建造物群保存地区を対象として～

A Tourists' Tsunami Evacuation Simulation in Heavy Snowfall Season: A Case Study for the Hokkaido Hakodate-shi The Important Preservation District for Groups of Historical Buildings

金度源・與田直斗・大窪健之・林倫子

After the Great East Japan Earthquake, many areas of Japan have been coming up with Regional Plan for Disaster reconsidering the evacuation for tsunami. However, not many of the plans include the effects on evacuation caused by snow in heavy snowfall areas. In Preservation Districts for Groups of Historic Buildings, many tourists come to visit for the attractive cityscape and architecture. Meanwhile, it is difficult for this area to devise a countermeasure of hardware side for disaster. Therefore this area have no choice to devise a countermeasure of software side for disaster to protect for tourists from disaster. For this reason, in this research, a tsunami evacuation simulation for the Preservation District with heavy snowfalls in Hakodate-city, Hokkaido will be performed for both snowy and non-snowy period and will extract problems to improve the evacuation.

22. 国宝松本城の震災時における観光客の避難誘導計画

Proposal of Evacuation Plan at the Time of Earthquake for Visitors in Matsumoto Castle as a Japanese National Treasure

大窪健之・紺谷渉・金度源・林倫子

Matsumoto Castle is designated as a Japanese National Treasure, and about 700,000 tourists visit there in every year. There is no detailed evacuation plan in Matsumoto Castle until now, so this paper aims to develop adequate evacuation plan in the event of a serious disaster. The unique spacial structure in Matsumoto Castle is complicated with plural buildings and stairs, and there are 6 of complexed type castles in the 12 of original wooden castles in Japan. Therefore, in this study, we developed simulation model for consideration about simultaneously evacuation in the event such as an earthquake. We utilize the cellular automaton type multi-agent simulation software that can explain the interaction of peoples in complexed structure of building. This paper aims to find the rational way of operation for leading visitors in the scene of maximum crowded situation.

23. 姫路城における大地震時の国内観光客の一斉帰宅抑制へ向けた滞在意図の変化に関する研究

A Study on Change in Intention to Stay of Domestic Tourists at Himeji Castle for Mitigating Simultaneous Returning Home after Big Earthquake

豊田祐輔・酒井宏平・崔明姫・鐘ヶ江秀彦

This study demonstrated how much tourists changed their intention to stay at Himeji Castle after a big earthquake. It is important to mitigate risk in their simultaneous returning homes after the earthquake, because such their behaviors make an aftermath more chaotic such as moving as large clouds and hindering emergency vehicles by mass private cars. The study found that tourists' intentions to stay varied according to their attributes and situations of the aftermath. The study also posed a challenge that further surveys in a variety of weather situations would provide essential information for local administrations to prepare for disasters at tourism destinations.

24. 京都市醍醐寺の地震防災拠点化に向けた一時滞在施設及び避難所としての利用可能性評価に関する研究

Estimation for usability of site in Daigoji temple as temporary disaster mitigation base for visitors and surrounding dwellers

吉田恭祐・大窪健之・金度源・林倫子

In Kyoto city, temples designated as emergency evacuation destination of tourists and others who are unable to return home are increasing, and when disasters occur, not only local

residents but also many people including tourists etc. Concentrate in Daigoji temple and it is necessary to have a evacuation plan as a regional disaster prevention base. Therefore, in this research, we will obtain Daigoji temple knowledge to utilize the temple as a disaster prevention center by multilaterally estimation the use of temporary stay facilities for visitors and other people who are unable to return home, and the use of refugees by residents.

25. 帰宅困難者数と未収容者の推計と避難施設の適正配置に関する研究 ―京阪神都市圏外を含めた京都市への来訪者を対象として―

Estimates of stranded commuters and Location Planning of Evacuation Facilities

北本英里子・山田悟史・及川清昭

When magnitude disaster hits the city, many people are expected to have difficulty returning home, as approach to the disaster, Kyoto specifies the shelters or transient facilities for the people returning home difficulty for the visitors, workers, and students. On this study, as it is possible to operate the shelter effectively for the city and to ensure the safety of the people returning home difficulty, using the person trip data, we estimate the population distribution on returning home difficulty outside the Kyoto city, calculate the number that people cannot be covered, and examine proper placement of the safe facilities.

26. 京都市先斗町における火災危険性と初期消火能力に関する評価研究

A Study of Fire Risk Analysis and Early Fire Extinguishing Possibility on Ponto-cho, Kyoto

杉山貴教・金度源・大窪健之・林倫子

Kyoto is the one of historical city which has many traditional distrits. Kyoto's Kagai is a densely wooden building district and is said to be one of the historical streets which represent Kyoto. But the densely wooden district is vulnerable to fire disaster. In order to enhance the fire prevention of district while keeping the scenery of historical city, its desirable to make a fire proposed measure through investigating a regional specific fire fighting. Fire risk is estimated by the past fire accidents and spread of fire simulation. Proposing the early fire prevention measure which raises the fire safety of the area is based on its possibility of implementation by residents and shop owners.

27. 水害伝承が住民の災害意識に及ぼす影響に関する一考察 ―滋賀県長浜市木之本町石道地区を対象として―

The Effect of Flood Oral Tradition on Disaster Conciousness: The Case of Ishimichi Area, Kinomoto-cho, Nagahama City in Shiga Prefecture

林倫子・坂本正樹・昌子知正・金度源・大窪健之

This study aims to reveal three points; 1) the history of flood in Ishimichi area in Nagahama City, Shiga Prefecture, 2) flood experience of the today's inhabitants and flood oral tradition in the local community, and 3) related factors between them and disaster consciousness of inhabitants. As a result, we found that there were two large floods in this area in Meiji era. And the oral traditions of past floods can raise recent inhabitants' consciousness towards flood disaster, but they aren't so effective for arousing their motivation for specific preparation.

28. 京都市における観光資源としての文化遺産の評価と防災対策に対する支払意思額との比較

A Study on the Evaluation of Urban Cultural Heritage as Tourist Attractions in Kyoto City and Its Comparison with the Willingness to Pay for Disaster Mitigation

小川圭一・幸野直人・安隆浩

It is necessary to make social consensus to protect urban cultural heritage from natural disasters, to make clear the necessity of cultural heritage disaster mitigation in disaster mitigation planning in historical cities. For this purpose, i t is necessary to show the necessity of cultural heritage disaster mitigation in historical cities objectively and quantitatively. In this paper, evaluation of urban cultural heritage as tourist attractions in Kyoto City is estimated using travel cost method. Furthermore, it is compared with the willingness to pay for cultural heritage disaster mitigation estimated by using contingent valuation method.

29.「記憶地図」を用いた無形の文化遺産の再生
―宮城県南三陸町志津川地区における地域の祭礼を事例として―

Reproducing an Intangible Cultural Heritage in the Post Disaster Recovery Phase by 'Memory Mapping': A Case of Religious Festival in Shizugawa area in Minami-Sanriku-Cho,Miyagi Prefecture

板谷直子（牛谷直子）・谷端郷・中谷友樹

In 2014, we conducted a survey of 'Memory Mapping' about lost festivals to visually store local people's memories and senses of places about activities of local festivals on maps in Shizugawa area in Minami-Sanriku-Cho that severely suffered from Tsunami in 2011. This paper aims to follow-up the previous study by examining how 'Memory Mapping' have encouraged the young parishioners to reproduce the Areshima shrine's religious festival after the disaster. Through interviewing parishioners, we identify that 'Memory Mapping' has effectively supported sharing of past experiences and meanings of the festival between young and old generations of parishioners activities for the festive recovery.

【報告】

1. 災害文化遺産としての禹王遺跡と京都の治水神・禹王信仰

The Remains of Yuwang as Cultural Heritage for Disaster in Japan and Its Meaning of Belief of the God of Flood Control of River Kamo, Kyoto

植村善博

One hundred and sixteen remains of Yuwang (禹王) are distributed in Japan. Yuwang was a founder of Xia Dynasty in ancient China about four thousands years ago. But, Yuwang as foreign God of flood control was widely received by Japanese people. The remains of Yuwang are devided into statue, picture, temple and shrine dedicated Yuwang (or Wenming 文 命) and monuments carved letter of Yuwang's name. Greater part of them have been established since mid- seventeen century. River Kamo in Kyoto was the first place of establishment of shrine dedicated Yuwang as the God of flood control in Japan. In Kyoto, there are three kind of remains of Yuwang. Pictures of Imperial Palace implies receiving Royal Family as good governor. Stone monument of Daihikaku Senkouji Temple compliments Ryoi Suminokura on his success in widening and shipping of Rivers Ooi, Fuji and Tenryu. Shrine of Yuwang at old Gojo bridge is a symbol of the belief of the God of flood control for resident by riverside of Kyoto.

2. 酒匂川流域における文命（禹王）信仰の成立と展開

Establishment and Development of Belief in Wenming (Yuwan) of the River Sakawa

関口康弘

After 1707 big eruption of Mt Fuji, flood plain of River Sakawa was greatly devasted by many torrential floods. River course has changed perfectly and harvests greatly decreased. Kyugu Tanaka was ordered by Tokugawa Shogun Yoshimune to improve river banks and to recover the suffered area. He achieved construction of new river banks for two years. And just after finish the recovery, he was dedicated two shrines for Wenming on the banks of both side. And festival of Wenming(the God of flood control) had been begun to bring river bank and mitigation disaster to person's attention. This festival has been continued until today.

3. 禹王サミットの開催経過と地域連携活動

The Progress of Yuwang Summit (Conference) and Activity of Areal Connection

大脇良夫

The author and his colleague rediscovered and reevaluated the exsistence and meaning of remains of Yuwang as the God of flood control. He visited Kyoto (2007), Yamanashi (2008), Kagawa, Oita, Hiroshima and Osaka (2009) for research on the remains of Yuwang. In order to discuss the meaning and present condition of remains of Yuwang and to exchange people and their culture, the first Yuwang Summit was held in 2010 at Kaiseimachi, Kanagawa Prefecture.We had good results to promote our research and to exchange information each other. After that, second Summit at Katashinamura,Gunma Pref, third Summit at Takamatsu,

Kagawa Pref fourth Summit at Hiroshima and fifth Summit at Usuki, Oita Pref were held continuously. In 2017 this year, sixth Summit will be held at Fujigawacho,Yamanasi Prefecture. We make up our mind to continue holding Yuwang Summit.

4. 河村瑞賢による淀川治水工事の方法

The Method of the Riparian Work for the Yodo River by Kawamura Zuiken

長尾武

In 1683, Tokugawa Shogunate entrusted the riparian work of the Yodo River to Kawamura Zuiken. He observed the mouth of the Yodo River and concluded that Kujo Island blocked the river to flow down straight. He dug through the center of the island to make the river reach Osaka Bay directly. He constructed a new river port for Osaka City which became an important commercial city. Zuiken's work was characterized by the methods, he used to make the river flow swiftly and to wash away the sand on the riverbed. Arai Hakuseki admired Zuiken's work by quoting the words of the Chinese riparian engineer Pan Jixun, who wrote: "Utilize the water for washing away the sand, the water cures its illness".

5. 加子母明治座の耐久性調査

Survey on Bio-degradation of Large-scale Traditional Wooden Folk-theater Kashimo-Meijiza

藤井義久・藤原裕子・鈴木祥之

Survey on bio-degradation of large-sacle traditional wooden volk-theater Kashimo-Meijiza (in Gifu Prefecture, built in 1894) was conducted. Severe degradation such as termite attack and decay was found at the foot of the posts. This was coused by the condensed water generated at the interface between base stone and the wooden posts. The areas exposed to higher humidity such as narrow under-floor levels had higher risk of bio-degradation. No severe degradation was found under roofing made of chestnut shillings.

6. 景観に配慮した土木構造物における補強工法に関する基礎的な研究

Counter mesure for the reinforcement of modern cultural heritage structures considering the scenery

原田紹臣・藤澤健一

It is important for future generation to continue keeping the modern cultural structure which was made by several materials, e.g. brick, concrete. For effective countermeasures, it is necessary to consider the load capacity and work ability of material joint: i.e. concrete joints. It has been proposed that fiber-reinforced polymer cement replace conventional construction techniques in concrete joints. We compared the characteristics of this countermeasure with countermeasures such as chipping in laboratory experiments. The results suggested that fiber-reinforced polymer cement is appropriate for the concrete joints of reinforcement countermeasures.

7. Study on the flood prevention countermeasures about historical and cultural city in the middle and lower reaches of the Yangtze River —Taking Nanchang City in Jiangxi province as the example

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The middle and lower reaches of the Yangtze River is a flood prone area, and along the Yangtze River Valley has many historical and cultural city, the occurrence of floods not only to the region caused huge economic losses, but also damage to the city's material and cultural heritage. Based on a large number of historical data and research basis, this paper analyzes the types and damage of floods and disasters in Nanchang City of Jiangxi Province, and puts forward the countermeasures and measures to prevent floods and disasters. At the same time, there will provide reference for the flood control measures of the historical and cultural cities in the middle and lower reaches of the Yangtze River.

8. 密集市街地の防災性能向上と狭隘道路整備をめぐる政策的展開

Political development concerning improvement of disaster prevention performance and narrow road development in densely built-up areas

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In this research, we grasped the actual condition of narrow road development efforts by questionnaire for specification administrative agencies nationwide and interview survey. Then, we extracted case examples of effective narrow road improvement policy from the viewpoint of improvement of disaster prevention performance in built-up area, and examined the possibility of policy development of narrow street network restructuring including narrow roads from the standpoint of disaster prevention.

9. 津波災害に対する避難所としての社寺の利用に関する研究 ～和歌山県串本町を対象とした空間と設備の評価と補完の提案～

The Evaluation of Spatial Possibility and Equipment of Shrines and Temples Against to the Tsunami Disaster on Kushimoto-cho Wakayama Prefecture

金度源・中塚脩斗・大窪健之・林倫子

Kushimoto-cho Wakayama prefecture is assumed tremendous damage by Nankai Trough Earthquake. Additionally, it is unusual in Japan, shrines and temples are designated as evacuation centers in Kushimoto-cho. Purpose of this study is to clarify the current situation of facilities in shrines and temples by questionnaire survey. Furthermore, it suggests a plan sheet to reveal the propriety that shrines and temples can treat as a shelter or not.